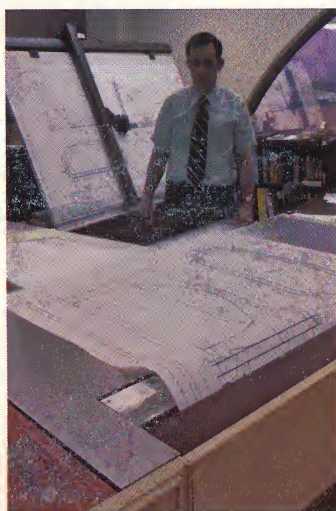


Aug 77

VERSATEC PRINTERS AND PLOTTERS



ORDER (DO) .2.0.20.0

(HP) .2.0.2.0

366

DEVELOP SALES COURSE (CI) .6.

.0.0.14.0

.0.0.3.0

264

GATHER DATA ON PROSPECTS (KU

TERRITORY FORECAST (CD) .3.0.0

(CM) .2.0.2.0

366

PERSONNEL RE

.2.0

.0.0.18.0

.0.0.19.0



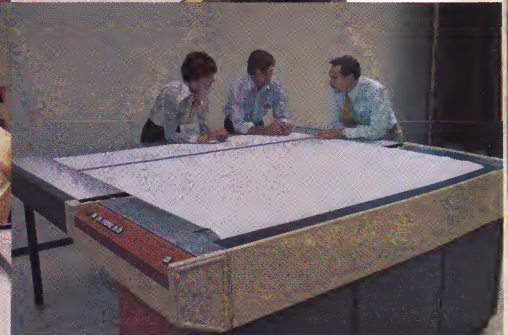
FORECAST BY MARKET

(DL) .2.0.9.0

166

P

W



(GIH) .3.0.11.0

MANAGEMENT REVIEW (HP) .2.0.1.0

336

DEVELOP T

SELECT PROSPECTS (JL. HP) .2.0
.0.0

610

SELLING (

DESIGN & WRITE (GS) .6.0.6.0

3

OUTPUT

The effectiveness of a computer is measured in what comes out—printed and graphic information that people can visualize, analyze and use. Versatec can improve that output. This brochure will show you how.

You'll read about machines that write alphanumerics in any size, style or language while drawing any image—from a simple bar chart to a complex map or drawing. You'll see plots that once required hours of pen plotting drawn in a matter of seconds. You'll hear about quiet machines that print and plot with ten times the reliability of impact printers or pen plotters.

A convenient model selection chart gives detailed specifications for thirty-six plotters and printer/plotters. These models offer the widest range of speeds, resolution and plotting widths available in electrostatics.

Two pages of exclusive features will explain why Versatec units outsell all competitive units combined.

How do you put this new capability to work? Easily. Plug-in controllers link Versatec units to popular computers, Tektronix® display terminals and video sources. Versaplot software can link electrostatics to existing application programs.

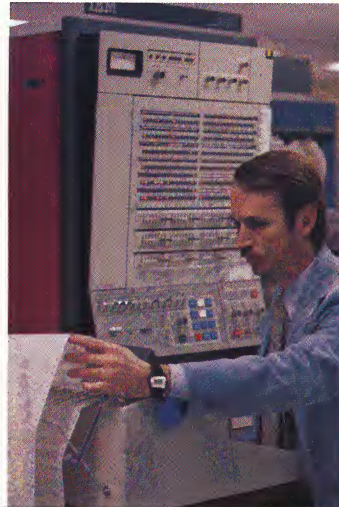
You'll see how continuing Versatec support maintains performance with a world-wide organization for service, parts and supplies.

Versatec is the leading manufacturer of electrostatic printers and plotters. This brochure will tell you why.

Contents

VERSATILITY	4-5
APPLICATION	6-7
THROUGHPUT	8-9
RELIABILITY	10-11
SELECTION	12-13
FEATURES	14-15
INTERFACING	16-17
SYSTEMS	18-19
SOFTWARE	20-21
SUPPORT	22-23

63,500	63,500	63,500	63,500	同(同)=大阪	63,500	64,500	64,500	65,000	65,000	65,000
52,000	52,000	52,000	52,000	熱延薄板(1.6 μ)=東京	53,000	53,500	53,250	53,250	53,250	53,25
51,500	51,500	51,500	51,500	同(同)=大阪	51,500	52,500	52,500	53,250	53,250	53,25
52,000	52,000	52,000	52,000	中板(3.2 μ)=東京	53,000	53,000	53,250	53,250	53,250	53,25
50,500	50,500	50,500	50,500	同(同)=大阪	50,500	51,500	51,500	52,250	52,250	52,25
52,000	52,000	52,000	52,000	厚板(6 μ)=東京	53,000	53,000	53,250	53,250	53,250	53,25
50,500	50,500	50,500	50,500	同(同)=大阪	50,500	51,500	51,500	52,250	52,250	52,25
51,000	51,000	51,000	51,000	厚板(12 μ)=東京	52			2,250	52,500	52,50
50,000	50,000	50,000	50,000	同(同)=大阪	50			1,250	51,250	51,25
342,500	342,500	347,500	347,500	銅地金=東京	347			2,500	356,500	356,50
349,000	349,000	350,000	350,000	同=大阪	350			2,500	352,500	352,50
242,500	242,500	242,500	242,500	電気亜鉛地金=東京	242			2,500	242,500	242,50
235,000	235,000	232,500	232,500	同=大阪	227			2,500	232,500	232,50
115,000	115,000	115,000	115,000	鉛地金=東京	115			3,000	115,000	115,00
115,000	115,000	115,000	115,000	同=大阪	115			5,000	1,065,000	1,065,00
1,065,000	1,065,000	1,065,000	1,065,000	アンチモニー=東京	1,065			5,000	1,075,000	1,075,00
1,075,000	1,075,000	1,075,000	1,075,000	同=大阪	1,075			5,000	2,030,000	2,030,00
2,040,000	2,030,000	2,030,000	2,030,000	すず地金=東京	2,030			5,000	2,020,000	2,030,00
2,015,000	2,015,000	2,015,000	2,015,000	同=大阪	2,000			5,000	1,475,500	1,475,50
1,475,000	1,475,000	1,475,000	1,475,000	ニッケル地金=東京	1,475			5,000	1,475,000	1,475,00
1,475,000	1,475,000	1,475,000	1,475,000	同=大阪	1,475			7,500	267,500	267,50
267,500	267,500	267,500	267,500	アルミ(99.7%)=東京	267			7,500	267,500	267,50
267,500	267,500	267,500	267,500	同(同)=大阪	267			2,500	222,500	222,50
222,500	222,500	222,500	222,500	同(再生、99%)=東京	222			2,500	222,500	222,50
222,500	222,500	222,500	222,500	同(同)=大阪	222					
320,000	320,000	322,500	322,500	1号銅線くず=東京				7,500	332,500	332,50
320,000	325,000	325,000	325,000	同=大阪				0,000	332,500	332,50
300,000	300,000	302,500	302,500	上銅くず=東京				7,500	312,500	312,50
307,500	312,500	312,500	312,500	同=大阪				0,000	320,000	320,00
265,000	265,000	267,500	267,500	下銅くず=東京				2,500	277,500	277,50
267,500	272,500	272,500	272,500	同=大阪				7,500	277,500	277,50
270,000	270,000	272,500	272,500	新黄銅くず=東京				7,500	282,500	282,50
270,000	275,000	275,000	275,000	同=大阪				0,000	280,000	280,00
240,000	240,000	242,500	242,500	黄銅棒くず=東京				6,500	249,000	249,00
250,000	255,000	255,000	255,000	同=大阪				0,000	260,000	260,00
240,000	240,000	242,500	242,500	黄銅けずりくず=				6,500	249,000	249,50
245,000	250,000	250,000	250,000	同=大阪				5,000	255,000	255,00
275,000	275,000	280,000	380,000	青銅鋳物くず=東京						
280,000	280,000	280,000	280,000	同=大阪						
265,000	265,000	270,000	370,000	青銅けずりくず=						
270,000	270,000	270,000	270,000	同=大阪						
92,500	92,500	92,500	92,500	鉛管板くず=東京						
102,500	102,500	102,500	102,500	同=大阪						
182,500	182,500	182,500	182,500	アルミ新くず=東京						
192,500	192,500	192,500	192,500	同=大阪						
91,000	90,500	91,500	91,500	綿糸(10単)=大						
91,500	91,000	92,000	92,000	綿糸(16単)=大						
92,000	91,500	93,000	93,000	綿糸(20単)=大						
115,000	114,500	115,500	115,500	綿糸(30単)=大						
117,500	117,000	119,000	119,000	綿糸(40単)=大						
72	72	71	71	かなきん2003番=						
92	92	91	91	ポプリン2015番=大阪	90	90	90			
69	68.5	68	68	38タコンバス級=大阪	68.5	68.5	68			
97.5	97.5	97.5	97.5	40ブロード=大阪	98	97	97			
1,960	1,970	1,960	1,960	毛糸(36双)=名古屋	1,960	1,950	1,930			
2,000	2,010	2,000	2,000	毛糸(48双)=名古屋	2,000	1,990	1,970			
2,080	2,090	2,080	2,080	毛糸(52双)=名古屋	2,080	2,070	2,040			
2,300	2,310	2,300	2,300	毛糸(60双)=名古屋	2,300	2,290	2,260			
11,840	11,820	11,815	—	生糸(21中2A)=横浜	11,810	11,790	11,765	2,260	2,260	2,260
11,850	11,825	11,825	—	生糸(同)=神戸	11,820	11,790	11,770	11,780	11,735	11,730
162.5	162.5	165.0	165.0	スフ糸(20単)=大阪	162.0	162.5	162.5	11,785	11,735	11,730
152.5	152.5	155.0	155.0	スフ糸(30単)=大阪	155.0	155.0	155.0	165.0	167.5	167.5
149.5	150.0	152.5	152.5	スフ糸(同)込み=大阪	152.5	152.5	155.0	157.5	165.0	165.0
217	215	215	215	生ゴム1号=東京	215	215	217	157.0	162.5	162.5
195	193	193	193	生ゴム3号=東京	193	193	196			
206.50	206.50	206.50	206.50	砂糖(上白)=東京	206.50	206.50	206.50	218	218	218
231.50	231.50	231.50	231.50	砂糖(白ざら)=東京	231.50	231.50	231.50	197	197	197
228.50	228.50	228.50	228.50	砂糖(中ざら)=東京	228.50	228.50	228.50			
212.50	212.50	212.50	212.50	砂糖(グラ)=東京	212.50	212.50	212.50			
213.50	213.50	213.50	213.50	砂糖(本グラ)=東京	213.50	213.50	213.50			
207.50	207.50	207.50	207.50	砂糖(ビート)=東京	202.50	202.50	204.50			
—	—	—	—	国内産小豆=東京	—	—	—			
—	—	—	—	中国産小豆=東京	—	—	20,000			
30,000	30,100	30,100	30,100	大正金時=東京	30,000	29,500	29,600	20,500	20,500	20,500



5

VERSATILITY

Any output

Versatec offers a simple, direct means for putting digital information on paper. Any information—numbers, words, pictures—in any combination. Providing alphanumerics and graphics together makes information more meaningful. And since one Versatec printer/plotter can replace a line printer, a pen plotter and a dedicated CRT hard copy output device, information can be provided at a lower cost.

Up to 200 dots per inch are available to define an image. Graphics. Maps. Pictures. Any image that can be digitized can be produced on a Versatec unit.

In fact, Versatec can give you full gray scale halftones from digital sources. Images are produced on any Versatec plotter in 100% black, pure white and a full range of gray scale. All available on permanent hard copy for record, analysis, consultation or presentation.

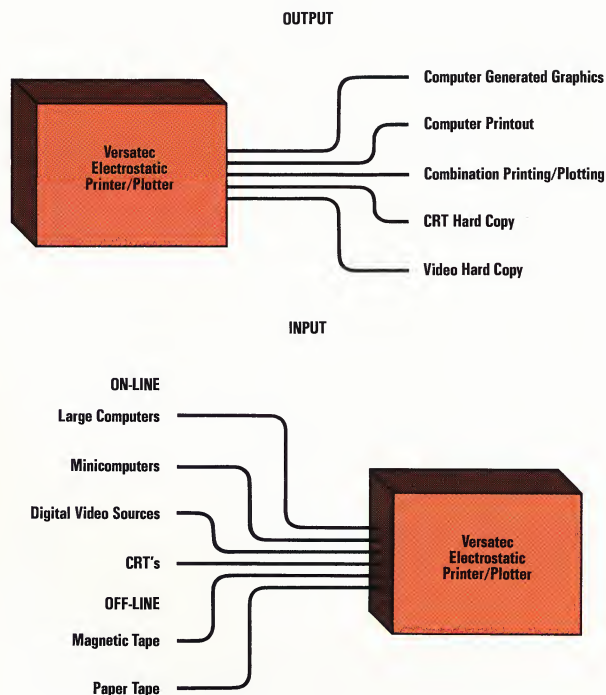
From any input

Versatec units serve the smallest minis and the largest IBM 360/370 and CDC computers. They receive their input from computer, CRT screen, video source or via data communication terminals and modems. They also operate off-line with input from magnetic tape.

They accept parallel ASCII printing code at up to one million characters per second or plotting data in the form of unweighted binary code of up to a burst rate of one million 8 bit bytes per second at TTL voltage levels. Asynchronous serial data in 10 or 11 bit code is also accepted at rates to 9600 BPS. All units are pin and voltage compatible with RS232C standards.

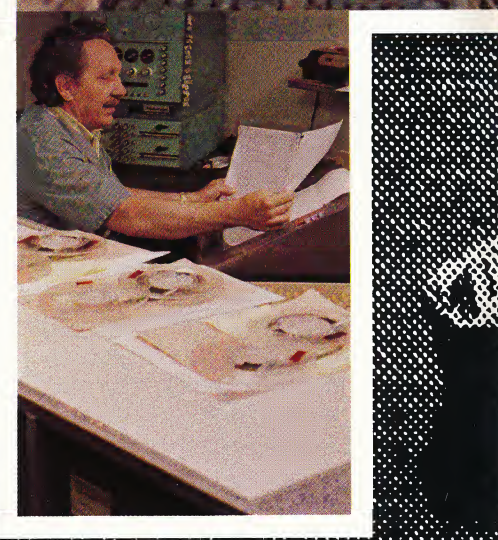
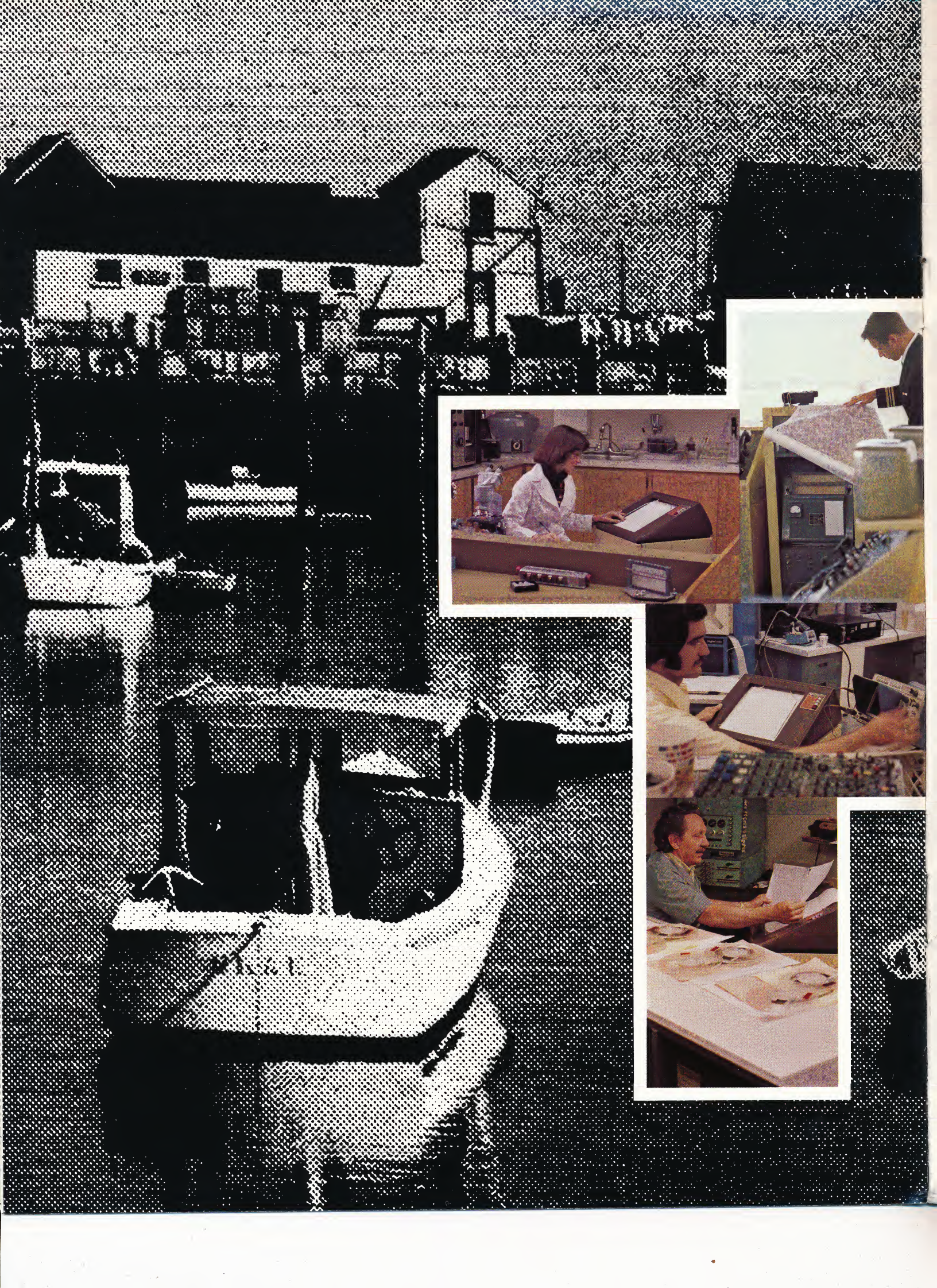
Versatec pioneered in the development of low-cost electrostatics that could be driven by a minicomputer. Plotting with Versatec software requires only 16K of memory and a disc operating system with Fortran compiler.

Large computers, such as IBM 360 and 370, are served by Versatec plotting systems with a transparent interface. The Versatec 360/370 plotting system emulates IBM line printer controllers operating at an I/O transfer rate comparable with a standard line printer. Through the use of a Versatec intelligent vector processor and Versaplot software, the computer can send data in any form—print, vector, raster or simultaneous print/plot information.



APPLICATIONS

General Data Processing	Line printing. Graphic plotting.
Geophysical Mapping	Weather. Oceanographic. Seismic.
Printing and Publishing	Proof copy for newspapers and journals. Halftone capability.
Word Processing	Proof and file copies, reports, letters.
Scientific Research	Data recording. Graphical analysis.
Medical	Cardiology. Axial tomography. Hospital information systems. Cancer research and therapy.
Military	Reconnaissance. Command and control. Secure communications.
Planning and Control	PERT charts. Business graphs. Street and utility layout. Satellite tracking. Traffic scheduling.
Communications	Remote terminals. Facsimile.
CRT Hard Copy	From analog and digital video displays.
Computer Aided Design	Clothing patterns. Printed circuit boards. Integrated circuits. Highway and city planning.



APPLICATION

While Versatec units are found in virtually every computer application, their capabilities have gained the fastest acceptance among three major groups.

The image-makers

Researchers, physicians, designers, mapmakers and business planners solve problems through image-making. They use Versatec plotters to visualize data for analysis, synthesis, confirmation or record. They use plotters to isolate variables, discover complex relationships or to see in a new perspective. Even when the user has a CRT screen, hard copy is a valuable aid.

Selection. The image-maker can view many images, then select one for hard copy. For example, most computerized axial tomography scanners include Versatec equipment. After the system performs a total body scan, the physician prints out selected views.

Enlargement. Many visuals are too large for a CRT screen. Our plotters let the user see "the whole thing" — a 3-foot x 12-foot PERT chart or a six-foot-wide production drawing. Some Versatec models can plot a continuous image up to six-foot-wide and 500-foot-long.

Enhanced detail. A black image on white paper is more readable. Even gray scales can be simulated. Versatec can also add shading, toning, grids, variable line widths and annotation that help analysis and presentation. Mapmakers use all these capabilities when producing thematic maps.

Annotation. Versatec plotters with character generators and selectable character sets can display captions, legends and other alphanumeric data. A simultaneous print/plot feature permits overlay of plot data and hardware generated print characters on the same line. Software symbol generators can produce any user-specified symbology—from specialized scientific notation to Japanese kanji.

Overlay. Whether mapping or designing a printed circuit, layer after layer of graphic data can be combined. The total effect of such overlays is best seen on electrostatic plots. Each overlay step can also be kept for record and future analysis.

Away from the computer. Hard copy plots are portable, permanent and presentable. Carry them home in a briefcase or roll them up and mail. Keep them forever for leisurely study, for comparison, for record. Use them at meetings to sell an idea, share information or gain broader participation in analysis and interpretation.

Interactive plotting. Producing graphics from computer display screen within seconds, Versatec plotters offer more throughput, faster turnaround and practical updates. See a hard copy plot. Change variables or perspective. See the effect. It's all down on paper, in a form that can be filed, shared or presented.

For example, a 36" x 56" PERT network diagram with 33,000 vectors requires fifty minutes of pen plotter time. A Versatec 8136 can draw this same diagram in less than thirty seconds.

The readers

Recording data, developing software and proofing typography appear to be unrelated applications. Yet all share the need for quick reference copy with quiet printer operation and high reliability.

More system suppliers and users are selecting Versatec, even when graphics are not required. They list such advantages as MTBF exceeding 3000 hours, MTTR of less than an hour, quiet operation in laboratory or office environments, faster speed, practical remote operation and a better performance/cost ratio.

Instrument users employ Versatec units for data collection/logging, software debugging, supervision and control. Newspapers, commercial typesetters, lithographers and word processing installations use Versatec to proof copy before phototypesetting.

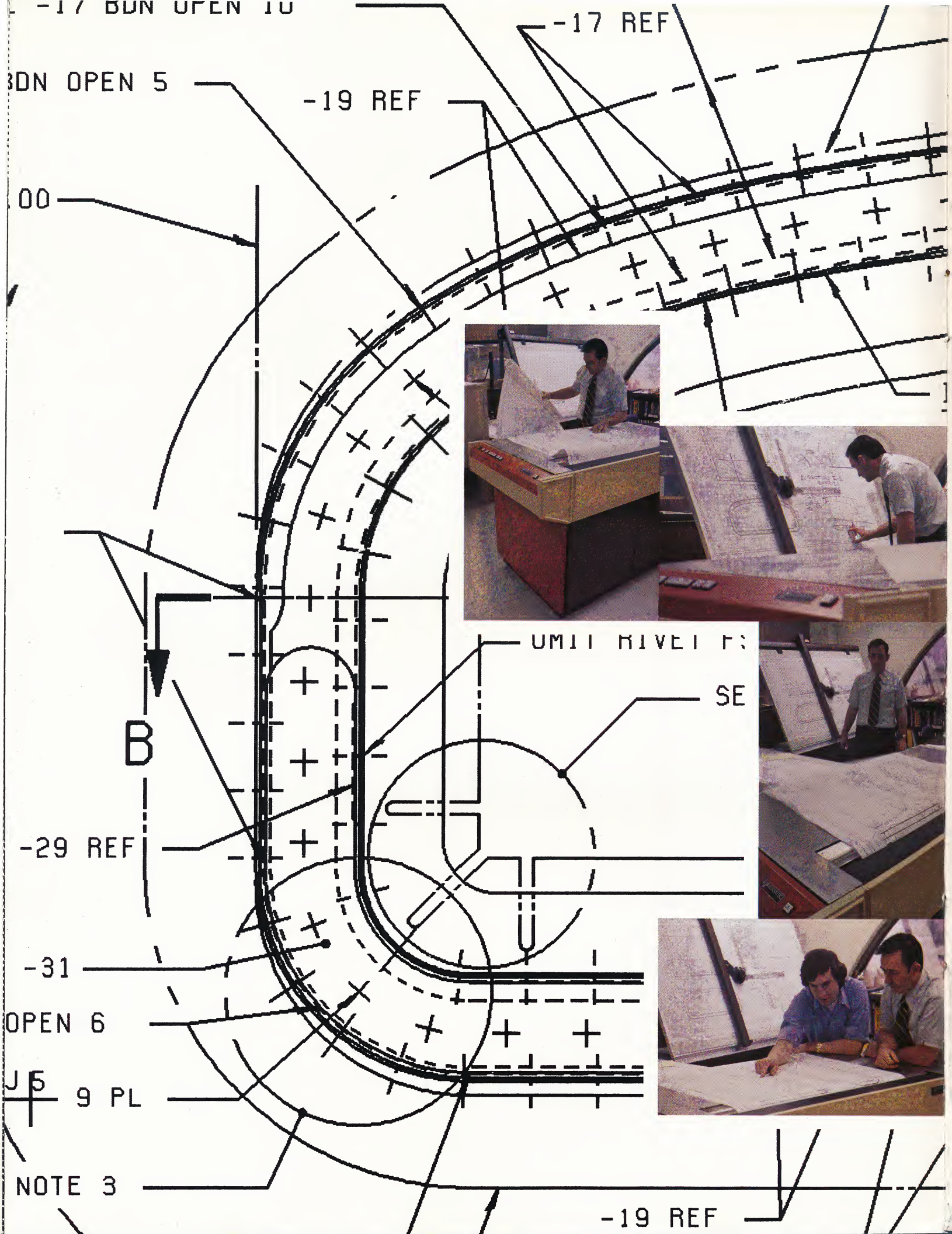
For more information on proofers for phototypesetting, write for Bulletin Number 111.

People with special output requirements

You think you have problems! A Japanese newspaper publisher must lay out complete newspaper pages in kanji. A military contractor must guarantee RFI/EMI/TEMPEST security, shipboard operation, reliability exceeding 3000 hours and a compatible interface to militarized computers. A research organization must output the full Roman and Greek alphabets, diacritic signs and over fifty scientific and mathematical symbols. All three got practical solutions from Versatec.

So can you. Produce halftones or other high data density images. Write with unique symbology or in multiple foreign languages. Use special formats. Meet tough environmental and security requirements.

Versatec can help you make digital information visible. Any information.



THROUGHPUT

Speed. The value of data decreases with time. Paced by mechanical arms, rolling drums and swinging hammers, the output of mechanical devices is too slow for many users. They need more throughput and faster turnaround. They need practical updates that provide visualizations now, not later.

With electrostatics, output is a function of paper travel speed, not the mechanical movement of arms, drums or hammers.

Versatec models plot an entire raster of data simultaneously across the paper width within milliseconds. So while pen plotter users think in terms of linear inches of pen travel or steps per minute, electrostatics draw areas of square feet per minute.

For example, a 20-inch-wide Model 2030 moves the paper at a rate of three inches per second, plotting 21 square feet per minute. A wider 42-inch Model

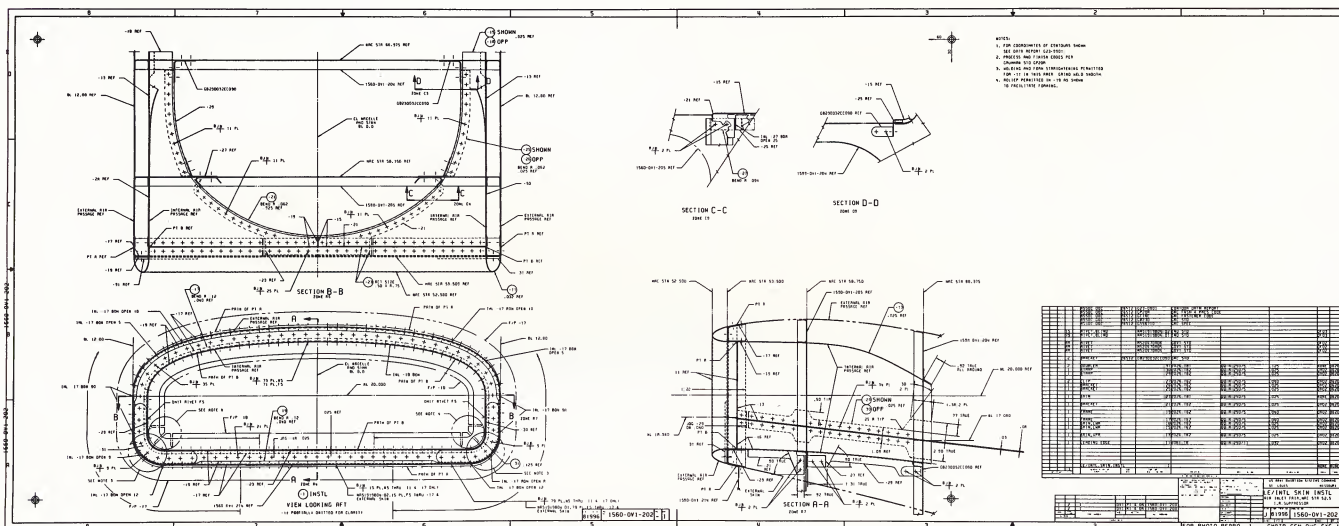
8142, plotting at two vertical inches per second, draws an area of 34 square feet per minute.

Another way to express speed is plotting time for a given drawing. Let's plot any 34" x 44" E-size drawing of any complexity. A Versatec Model 8136 will produce that drawing in less than sixty seconds.

How much does this speed cost in computer time?

Although it is necessary to sort and rasterize vector data, an IBM 360/65 with Versaplot software can sort and rasterize 10,000 vectors in less than five seconds.

This minimal CPU and I/O time can be further reduced by plotting off-line. Versatec's intelligent vector processor accepts print, raster, vector or simultaneous print/plot data, translates to rasters and directs plotting on any Versatec plotter.



Plot run on a Versatec model 8136 with vector processor and IBM 370/158.

Plot time

On-line: 70 seconds

Off-line: 140 seconds

Plot size: 84" x 36"

Vectors: 193,000

Vector ordering CPU time: 30 seconds

Produce engineering drawings. Detail shown at actual size. Reduced drawing shown above.


```

1  Z4D00,Z5D00,Z5C00,Z4E00,Z6B00,Z6000,Z4B00,Z6100,ZF000,
2  ZF100,ZF200,ZF300,ZF400,ZF500,ZF600,ZF700,ZF800,ZF900,
2  Z7A00,Z5E00,Z4C00,Z7E00,Z6E00,Z6F00,Z7C00,ZC100,ZC200,
3  ZC300,ZC400,ZC500,ZC600,ZC700,ZC800,ZC900,ZD100,ZD200,
4  ZD300,ZD400,ZD500,ZD600,ZD700,ZD800,ZD900,ZE200,ZE300,
5  ZE400,ZE500,ZE600,ZE700,ZE800,ZE900,ZAD00,ZE000,ZBD00,
6  Z4A00,Z6D00,Z7900,Z8100,Z8200,Z8300,Z8400,Z8500,Z8600,
7  Z8700,Z8800,Z8900,Z9100,Z9200,Z9300,Z9400,Z9500,Z9600,
8  Z9700,Z9800,Z9900,ZA200,ZA300,ZA400,ZA500,ZA600,ZA700,
9  ZA800,ZA900,ZC000,ZFA00,ZD000,ZA100,Z9F00 /
0009 DATA LSTTST/9/,KUNIT/6/,IUNIT/5/,IBLNK/' ',LUNIT/8/

C
C READ INPUT PARAMETERS AND INITIALIZE
C
0010 READ (IUNIT,10,END=25) MODEL,LBLK2,NMCHRS
0011 10 FORMAT(I4,1X,I2,1X,I2)

C
0012 DO 20 MDLIDX=1,18
0013 IF (MODL(MDLIDX) .EQ. MODEL) GO TO 50
0014 20 CONTINUE

C
C HERE, WE HAVE INVALID MODEL NUMBER
0015 25 WRITE (KUNIT,30) MODEL
0016 30 FORMAT(1H ,10X,I4,17H IS INVALID MODEL
0017 STOP

C
0018 50 NDOTS = NDOT(MDLIDX)
0019 ISCAN = NDOT(MDLIDX)/8

C
C ASSUME ZERO ACTIVE LINES
0020 LBLK2 = (LBLK2 * 1024) - 11000
0021 NSCAN = LBLK2/(ISCAN * 2)
0022 IF (NMCHRS .LE. 0) NMCHRS = 96
0023 BEGIN = .TRUE.
0024 WRITE(KUNIT,75) MODEL,LBLK2,NMCHRS
0025 75 FORMAT(9H MODEL = ,I4,5X,15H BUFFER SI
117H CHARACTER SET = ,I2)

C
C READ TEST RANGE AND CHARACTER IF APPLICAB
C
0026 100 ICHAR = IBLNK
0027 READ (IUNIT,110,END=130) IF
0028 110 FORMAT(I2,1X,I2,1X,A2)
0029 GO TO 150

C
C END OF FILE ON INPUT. IF HAVE
0030 130 IF (.NOT. BEGIN) GO TO 2500
0031 IFRST = 1
0032 ILAST = LSTTST

C
0033 150 BEGIN = .FALSE.
0034 IF (ILAST .LT. IFRST) ILAST
0035 WRITE (KUNIT,175) IFRST,ILA
0036 175 FORMAT(21H REQUESTED TESTS

0037 DO 2000 ITST=IFRST,ILAST
0038 GO TO (200,300,400,500,600,700,800,900,2500),ITST

C
C TEST 1 - GENERATE ROTATING CHARACTER SET
C
0039 200 WRITE(LUNIT,210)
0040 210 FORMAT(1H1)
0041 DO 250 J=1,NMCHRS
0042 K = J - 1
0043 IF (J .EQ. 1)
0044 1 WRITE(LUNIT,230) (LCHAR(I),I=1,NMCHRS)
IF (J .NE. 1)
0045 1 WRITE(LUNIT,230) (LCHAR(I),I=J,NMCHRS),(LCHAR(I),I=1,K)
0046 230 FORMAT(1H ,96A1)
0047 250 CONTINUE
0048 WRITE (KUNIT,275) ITST
0049 275 FORMAT(29H NORMAL TERMINATION FOR TEST ,I2)
GO TO 2000

C
C TEST 2 - ROTATING CHARACTER SET WITH PARTIAL BUFFER
C
0050 300 WRITE (LUNIT,210)
0051 DO 350 J=1,NMCHRS
0052 WRITE(LUNIT,230) (LCHAR(I),I=J,NMCHRS)
0053 350 CONTINUE
0054 WRITE (KUNIT,275) ITST
0055 GO TO 2000

```



11

RELIABILITY

The reliability of a pen plotter or impact printer is measured with a Mean Time Between Failure (MTBF) of hundreds of hours. Versatec electrostatics have a MTBF exceeding three thousand hours. On a single shift basis, that's equivalent to more than one year's operation. This order of magnitude improvement in reliability is easy to explain.

The key to reliability is simplicity. Versatec electrostatics write without cranky mechanical arms, clattering hammers or sputtering pens. Nothing moves except paper, fan and toner pump. Writing is electronic, not mechanical.

In Versatec machines, programmed voltage is applied to an array of densely spaced writing nibs embedded in a stationary writing head. Upon digital command, the nibs selectively create minute electrostatic dots on the paper passing over the writing head. The paper is then exposed to liquid toner, producing permanent text or image.

As paper emerges, it is ready to distribute and read. No special handling is required. The printed image is of archival quality, insensitive to light and reproducible on office copying machines. Translucent paper for blue line copying is also available.

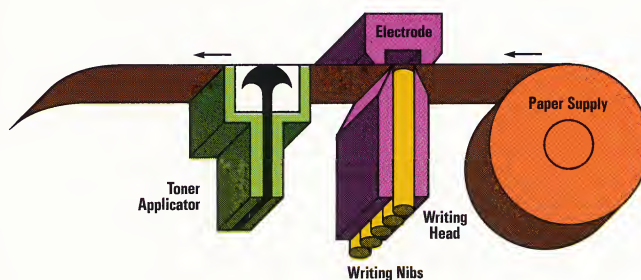
Diagnostics and repair

The simplicity of Versatec machines eliminates the need for adjustments, alignment and calibration. Operator training requires only a few minutes.

All wide models (22" and above) include self-diagnostics that allow testing board by board without external test gear. Integral self-diagnostics test executive and control functions. In printer versions, the unit also simulates generation of ASCII data.

Users of smaller machines can diagnose problems with a Versatec test exerciser. This suitcase-sized instrument exercises all functions and options of Versatec printers and plotters. Without computer or diagnostic software, it drives print, plot or simultaneous print/plot functions. It can be used to check serial or parallel data streams, test remote functions and analyze data dependent problems.

Mean Time To Repair (MTTR) for all Versatec printers and plotters is less than one hour.



VERSATEC FIRSTS IN TECHNOLOGY

Print Quality	First 160 dot-per-inch and 200 dot-per-inch resolution with dual array. First 16 x 16 Roman, Courier and Gothic fonts.
Format	First wide plotters—20, 24, 36, 42 and 72-inch wide formats.
Interface	First RS232 interface. First direct CRT interface. First on-line and off-line vector processing controllers. First controllers to match all popular computers.
Software	First minicomputer graphics software. First universal graphics software package. First area toning, shading and line-masked gridding subroutines. First graphics software with selectable processing algorithms.
Hardware	First sealed paper compartment. First machines using fan-fold paper.
Military	First RFI/EMI, TEMPEST, ruggedized units.
International	First character sets in Russian, Hungarian, Swedish, French and Greek.

Paper Width 500 foot rolls	8½		11				
Plotter Model Number	800	900	1100	1110	1600	1200	2000
Resolution dots per inch Vertical and horizontal	100	200	100	100	160	200	100
Plotting Speed IPS (paper speed) Asynchronous square feet per minute	1.2 4.0	1.25 4.2	1.2 5.1	2.4 10.2	0.75 3.1	1.0 4.4	0.75 7.2
Maximum Plot Width inches	8.0	8.0	10.24	10.24	10.0	10.56	18.56
Number of Writing Nibs	800	1600	1024	1024	1600	2112	1856
Printer/Plotter Model Number	800A	900A	1100A	1110A	1600A	1200A	2000A
Print Speed lines per minute	500	1200	500	1000	1000	1000	300
Print Columns Per Line	100	100	132	132	100	132	232
Paper Widths	8½ Fan-fold (1000 sheets) 8½ x 11 inches or roll 8½ inches x 500 feet long		11 Fan-fold (1000 sheets) 11 x 8½ or 11 x 11 inches or roll 11 inches x 500 feet long				
Printer Model Number	LP-810	LP-960	LP-1150	LP-1175	LP-1616	LP-1250	
Printer/Plotter Model Number	800A	900A	1100A	1110A	1600A	1200A	
Print Speed lines per minute	500	1200	500	1000	1000	1000	
Columns Per Line	100	100	132	132	100	132	
Characters Per Inch	12.5	12.5	12.5	12.5	10.0	12.5	
Lines Per Inch factory setting	6.6	8	6.6	6.6	7	8	
Printed Lines Per Fan-fold Page Factory setting: standard character set†	70	84	54	54	60	64	
Character Set Size Standard Optional	64 96 or 124	96 124	64 96 or 124	64 96 or 124	96 124	96 124	
Font Dot Matrix	7 x 9	16 x 16	7 x 9	7 x 9	16 x 16	16 x 16	
Standard Available Fonts	Gothic	Roman, Gothic or Courier	Gothic	Gothic	Roman, Gothic or Courier	Roman Gothic or Courier	

†Maximum line setting is variable.

SECTION

20		22		24		36		42		72*
2030	2160	8122	8222	8124	8224	8136	8236	8142	8242	8172
100	160	100	200	100	200	100	200	100	200	100
3.0 21	0.45 5.4	2.0 18	1.0 8.8	2.0 19	1.0 9.6	2.0 29	0.75 11	2.0 34	0.50 8.5	1.0 30
18.56	18.0	21.12	21.12	23.04	23.04	35.20	35.20	40.96	40.96	71.68
1856	2880	2112	4224	2304	4608	3520	7040	4096	8192	7168
2030A	2160A	8122A	8222A	8124A	8224A	8136A	8236A	8142A	8242A	8172A
1200	500	790	480	790	480	790	360	790	240	390
232	180	264	264	288	288	440	440	512	512	896

*Note 72 inch wide plotters can be obtained with an option to accommodate 50 and 63 inch wide paper. Paper in 50, 63 and 72 inch widths is supplied in 1500 foot rolls.

In printing applications, the 11 x 8½ inch output of Versatec models 1100A, 1110A, and 1200A is fully compatible with the larger 11 x 14 inch page format printed by an IBM 1403 or 3211. These units have the advantage, however, of printing the full 132 columns across eleven inches, saving paper, simplifying handling, and reducing file requirements. Other printer/plotter models may require JCL changes to set an appropriate forms control image for list output.

Font: 16x16 dot matrix
"Versatec Roman"
Resolution: 200 dots/inch

ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
abcdefghijklmnopqrstuvwxyz{ }
^_ !"#%&'()*+,-./0123456789:
;<=>?@~■'

Font: 7x9 dot matrix
Resolution: 100 dots/inch

ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
abcdefghijklmnopqrstuvwxyz{ }
^_ !"#%&'()*+,-./0123456789:
;<=>?@~■'

Font: 16 x 16 dot matrix
"Versatec Gothic"
Resolution: 200 dots/inch

ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
abcdefghijklmnopqrstuvwxyz{ }
^_ !"#%&'()*+,-./0123456789:
;<=>?@~■'

Font: 16x16 dot matrix
"Versatec Roman"
Resolution: 160 dots/inch

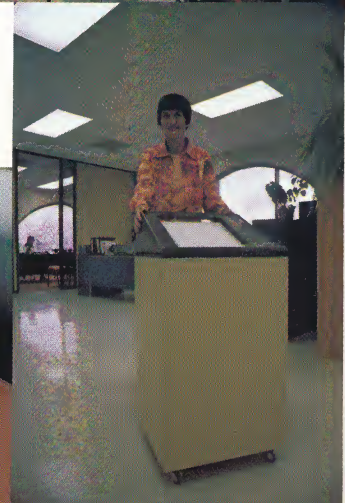
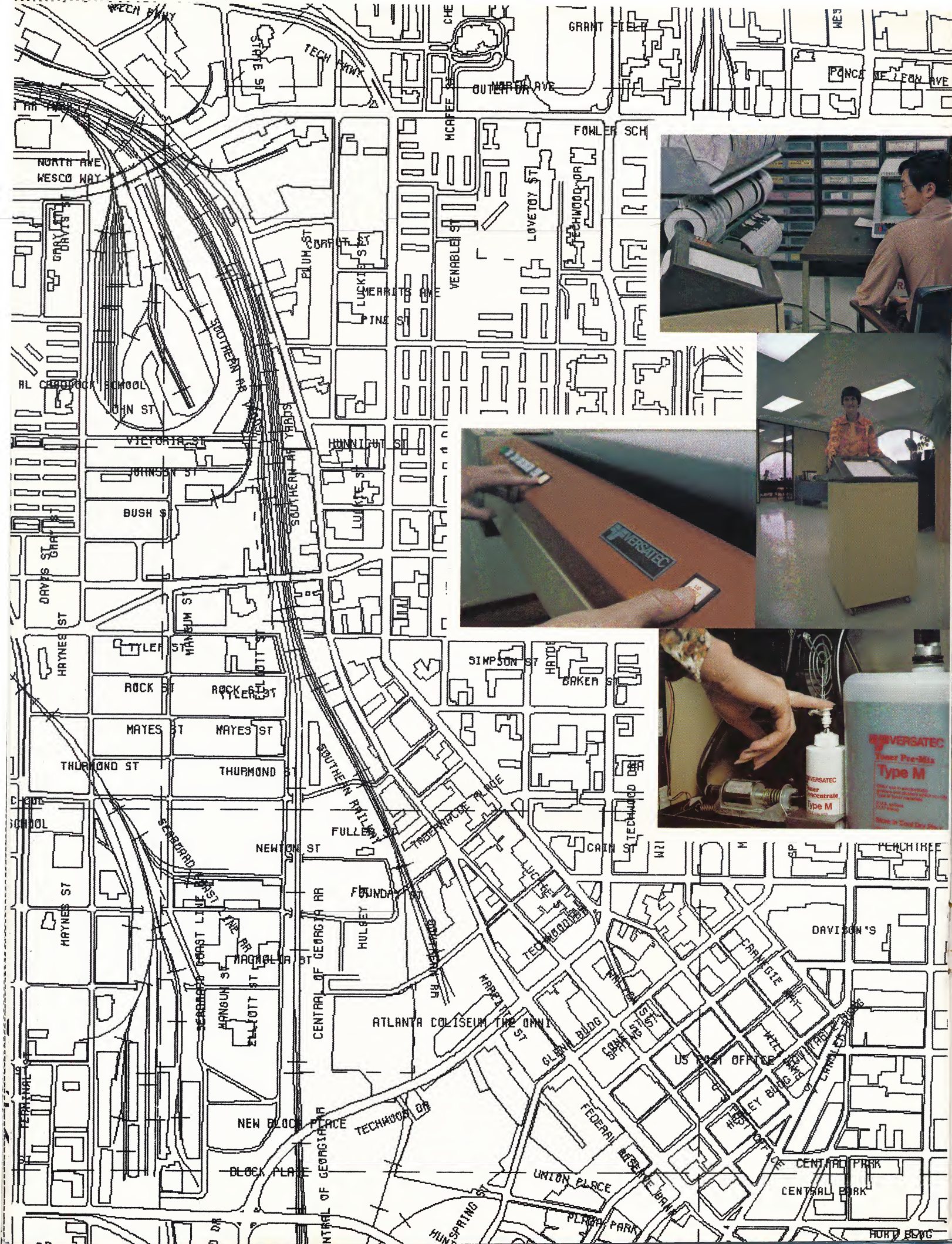
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
^_~■'abcdefghijklmnopqrstuvwxyz{ }
!"#%&'()*+,-./0123456789:
;<=>?@~■'

Font: 16 x 16 dot matrix
"Versatec Courier"
Resolution: 200 dots/inch

ABCDEFGHIJKLMNOPQRSTUVWXYZ[¢]†
abcdefghijklmnopqrstuvwxyz!↓±\$
!"#%&'()*+,-./0123456789:;
½=¾?@

Kanji (Software generated)
Font: 24x24 dot matrix
Resolution: 160 dots/inch

搾 嬾 寔 嬾 搾 寔 嬾 搾
寔 搾 嬾 搾 寔 嬾 搾 寔
嬾 寔 搾 寔 嬾 搾 寔 嬾



15

FEATURES

Extra reliability

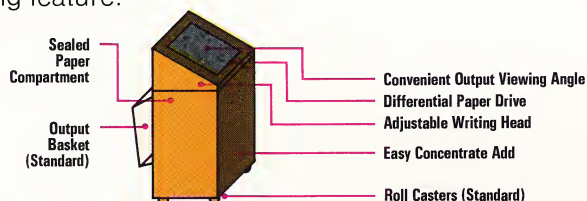
Differential drive eliminates paper tracking problems, even if the roller gets dirty. Other systems use a solid drive roller and edge guide that can skew and tear paper.

A sealed compartment protects paper. This is one reason why Versatec can offer the widest environmental specification available—operation at 32°–105°F. (0°–40°C) and relative humidity of 10%–95%. Electronic components are also protected in a separate compartment. Use of several modules rather than a large circuit card simplifies troubleshooting and reduces parts cost.

Spare parts cost less. Be sure to compare the cost of such key replacement parts as toner pump and writing head. Competitive equivalents cost as much as eight times that of Versatec components.

Operating features

All 8½, 11 and 20-inch models offer a 25 degree viewing angle. This exclusive feature allows the reader to glance over and see the output without standing. Programmers and terminal operators find the better viewing angle of special value, but every user will appreciate this exclusive human engineering feature.



There are two ways to adjust contrast while running. A "DARK" control potentiometer adjusts back plate voltage to compensate for changes in ambient conditions. In standard models, an exclusive hand pump adds concentrate while on-line. In wide plotters, concentrate is added automatically. An optical sensor adjusts image darkness. Either way, no mess, no stops.

The disposable toner container is bigger and easier to use.

Another exclusive. The writing head can be adjusted while running. In this way, the operator can see the effect of adjustment on output.

Optional paper winders for rolls and receiving baskets for fanfold paper simplify handling.

Cramped for space? Versatec's 11-inch models occupy less than half the floor space of competitive units.

Need portability? All Versatec units are on casters.

They weigh from 20–50% less than comparable printer/plotters.

More efficient data handling

Versatec units accept asynchronous input, even at maximum speed. Both serial and parallel interfaces are offered at no extra charge for all units through 20-inch.

Versatec offers true simultaneous printing and plotting with hardware generated characters and plotting on the same scan line.

Formats

Versatec printers and printer/plotters offer variable line spacing. For example, the model 900A is factory set at 84 lines per page, but line count can be adjusted from a minimum of one line to a maximum of 95 lines.

Versatec 11-inch printers and printer/plotters also offer the convenience of a 132 column line on a compact 11" x 8½" page. Or the user can choose from six other widths—from economical 8½" to super-wide 72".

Better output quality

A choice of resolution (100, 160 or 200 dots per linear inch) provides up to 40,000 points per square inch. In 160 and 200 dot per inch models, a 16 x 16 dot matrix makes 256 points available to create a single character.

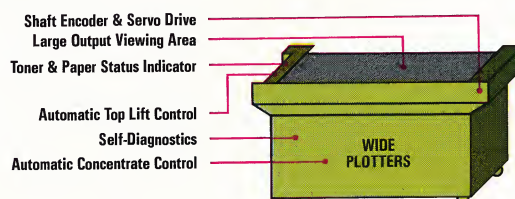
Dual array writing heads produce an overlapping dot pattern for blacker blacks and continuous lines. Dual array is standard in all Versatec models.

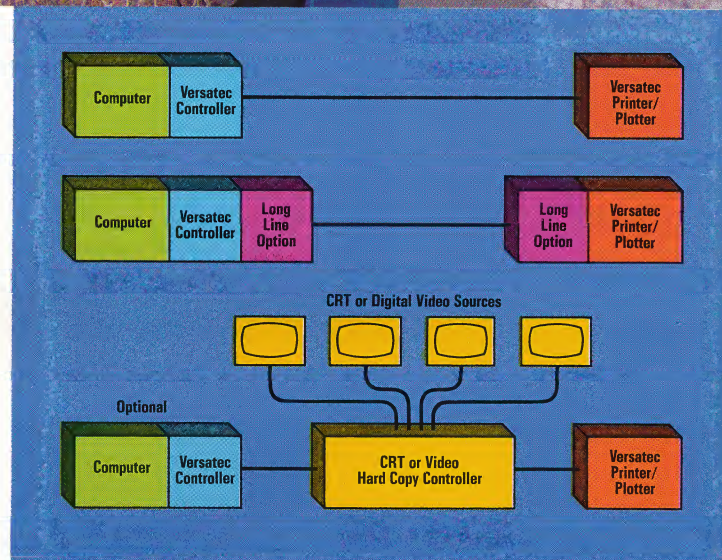
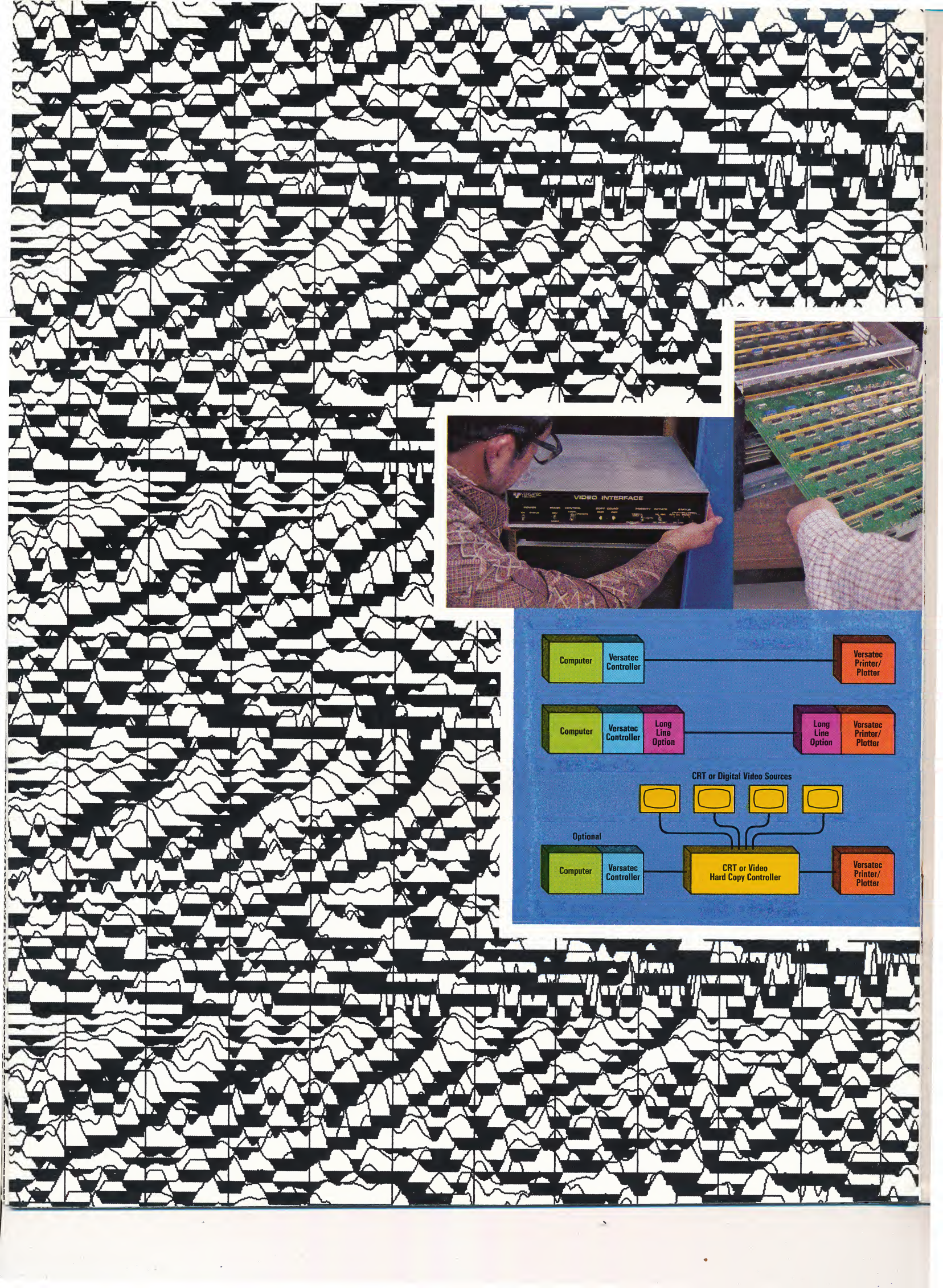
Meeting government requirements

Selected Versatec models can be engineered to meet military specifications. Versatec products are available under GSA, Group 70, computer related products. ADPESO approval is not required.

Special wide plotter features

Versatec 22 through 72-inch models deliver the best plotting quality of any electrostatic. An exclusive shaft encoder and servo motor drive assure accumulated vertical accuracy of 0.2% or 15 mils, even when operating at maximum speed. The encoder determines timing and writing location; the servo motor drives the paper. The servo paper drive gradually decelerates and stops paper movement without overshooting.





17

INTERFACING

Versatec on-line printer/plotter controllers interface with most popular computers. These software and hardware data handlers electrically and physically match a specific CPU to Versatec units, providing plug-in hardware and software print/plot driver compatibility.

Controllers are in the form of printed circuit boards or rack-mounted boxes with their own power supply. They generally include their own stand-alone diagnostic software programs, complete with binary loader and software drivers for print, plot and simultaneous print/plot functions.

Data transfer may be programmed input/output (PIO) or direct memory access (DMA). Since DMA controllers access memory directly, they minimize CPU overhead.

Controller cables are twenty-foot-long (standard) or up to fifty-foot-long (optional). Long line options allow cable lengths to 1000 feet. Longer lengths available.

On-line controllers

This is a representative list. The controller line is expanding rapidly.

Manufacturer	Models
Data General	NOVA 2, NOVA 3, Super NOVA, 800 and 1200 series, Eclipse.
Digital Computer Controls	D116 series
Digital Equipment Corporation (DEC)	PDP 8, 11, 12
Hewlett-Packard	2114, 2115, 2116, 2100A, 2100S, 21MX (M or E series)
IBM	360, 370 (See following "Systems" section for more detail.)
Interdata	70, 74, 80, 85, 6/16, 7/16, 7/32 and 8/32
ROLM	Military computers
Univac	AN/UYSK 7, 15 and 20, UNIVAC 1616

For information about a particular controller, write for Controller Product Information Bulletin. Be sure to tell us your specific computer model. Also, contact Versatec for interface information on computers not listed.

CRT and video hard copy controllers

C-Tex and video hard copy controllers permit hard copy production from CRT display or virtually any digital video sources.

A dedicated unit isn't necessary. The same Versatec printer/plotter used for computer-directed printing and plotting can produce hard copies from CRT on command.

There is no warm-up time. Copy time is twenty seconds. Additional copies can be produced sequentially every twenty seconds.

Copy emerges from the Versatec unit dry and ready for use. It's truly permanent. No fade or deterioration like dry silver paper. No temperature-sensitive problems. And you can write on it with pen or pencil. Cost is 2-3¢ a page, or about one-fourth that of dry silver paper.

Tektronix and Hewlett-Packard display terminals

The Versatec C-Tex controller is a plug-compatible link between Tektronix display terminals (4006, 4010-1, 4012, 4013, 4014-1, 4015-1 or 613) and most Versatec plotters and printer/plotters. The controller emulates Tektronix 4610 and 4631 hard copy units.

The Versatec 1640 Hard Copy Output System combines a printer/plotter with a video controller in a stand alone package that accepts input from up to eight Hewlett-Packard 2640 series display terminals.

Digital video sources

The Versatec video hard copy controller allows production of hard copy output on standard Versatec plotters and printer/plotters from virtually any digital video source. The interface, packaged in a rack-mountable module, accepts video signals conforming to EIA standards RS-170, 330, 343, 375 or 412. No software is necessary. The interface translates video signals into raster data.

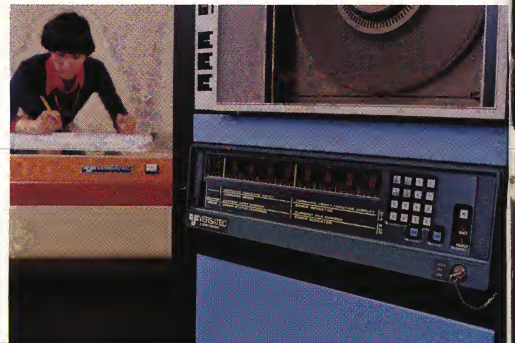
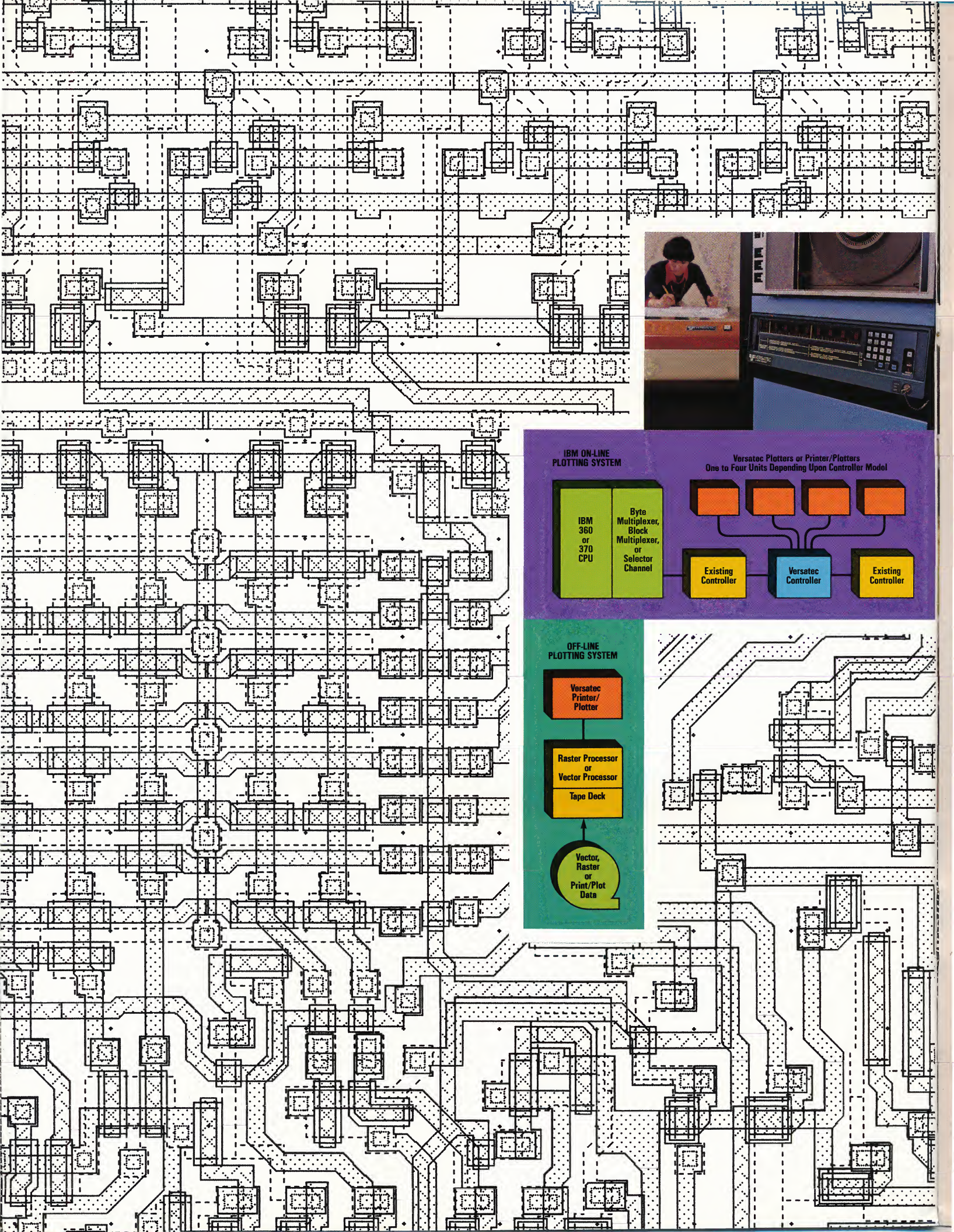
An expansion feature allows the user to increase the size of the plotted image. A multi-copy feature automatically produces up to 15 copies. A TTL/EIA video input option adds external clock and composite sync compatibility.

Both C-Tex and video hard copy controllers have long line options permitting operation of the plotter up to 1000 feet away from the controller. C-Tex also has a similar long line option between controller and computer.

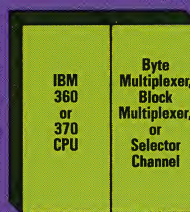
Shared usage

Any of the three pre-wired priority systems may be used to share CRT or video output requests with computer-directed printing or plotting.

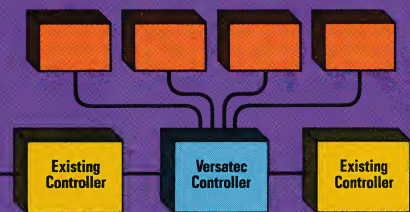
1. Versatec unit finishes a printed line, requiring a fraction of a second, and then prints CRT copy within twenty seconds, then returns to computer-directed work.
2. Versatec unit finishes a complete page (four to nine seconds), prints CRT hard copy within twenty seconds, then returns to computer-directed work.
3. Versatec unit completes computer-directed work to end of transmission before producing CRT copies.



IBM ON-LINE PLOTting SYSTEM



Versatec Plotters or Printer/Plotters One to Four Units Depending Upon Controller Model



OFF-LINE PLOTting SYSTEM



19

SYSTEMS

On-Line

A plotting system designed for IBM 360/370. The on-line Versatec plotting system emulates the IBM 3211/3811 or IBM 1403/2831 printer/controller subsystems. Channel interface is via IBM byte multiplexer, block multiplexer or selector channel.

The plotting system accepts data on these channels in burst, forced burst or byte multiplex mode. Using a double buffer of 1024 bytes, the controller accepts a maximum burst transfer rate of 500,000 bytes per second. The Versatec system, plotting in vector mode, reduces I/O transfer by 90% to rates comparable with standard line printers.

No changes are necessary to the IBM 360/370 OS or OS/VS operating system. The plotting system may either be attached directly by the user job or the output routed through the standard system spooler (e.g. HASP).

Versaplot version 07 provides direct software compatibility with existing pen plotting application programs and provides electrostatic extension for grid overlay, area shading and toning. The software handles vector or raster mode operation. Integrated pages of print and plot information provide easily read reports.

The Versatec system controller performs the necessary emulation, control and buffer functions.

Three on-line controller models

Model 181 uses a single address to support a single on-line Versatec unit. The multi-address Model 182 supports two units and Model 184 supports up to four. The multi-address configurations still use only one position on the IBM bus. They operate transparently to the channel and operating system as independently addressed and separately controlled 3211 or 1403 line printer controllers with plotting capability. The system controller emulates the IBM 3211/3811 or 1403/2821, provides compatible printer control and logic checking, as well as buffers for print/plot lines, universal character sets and forms control. Multi-address versions provide control procedures and buffers for each attached on-line unit. Channel operations to one device do not alter the state or processing functions of other units.

For detailed information, write for Bulletin Number 259: "The 360/370 plotting system."

Off-line

Off-line vector plotting system. This system translates vector plot data to raster format for fast electrostatic plotting. It accepts print, vector and raster data from magnetic tape. System components include an intelligent vector processor with an operator panel and display, magnetic tape deck, up to four Versatec plotters or printer/plotters in any combination, and Versaplot software.

Using the system's operator panel, the operator can select files to be output, number of copies, mode of operation for tapes with or without system labels, and either print or plot modes. The operator can interrupt plotting or printing operations at any point without loss of data.

Vector processor models are available to handle nine track—800 cpi or nine track—1600 cpi or 800/1600 cpi dual density. Both models operate at tape speed of 45 ips and rewind speed of 150 ips.

The intelligent vector processor is packaged in one free standing cabinet. The processor is 72" high, 23" wide and 25" deep. Weight is 385 pounds.

Off-line raster processing systems. This system accepts raster or print data, but *not* vector data. Vector to raster processing is performed by the host computer.

The system consists of a read-only magnetic tape deck and a controller. It may be used with any Versatec printer, plotter or printer/plotter.

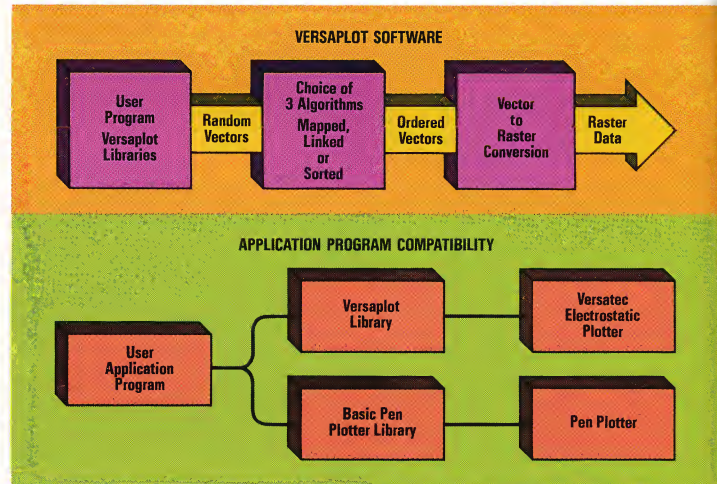
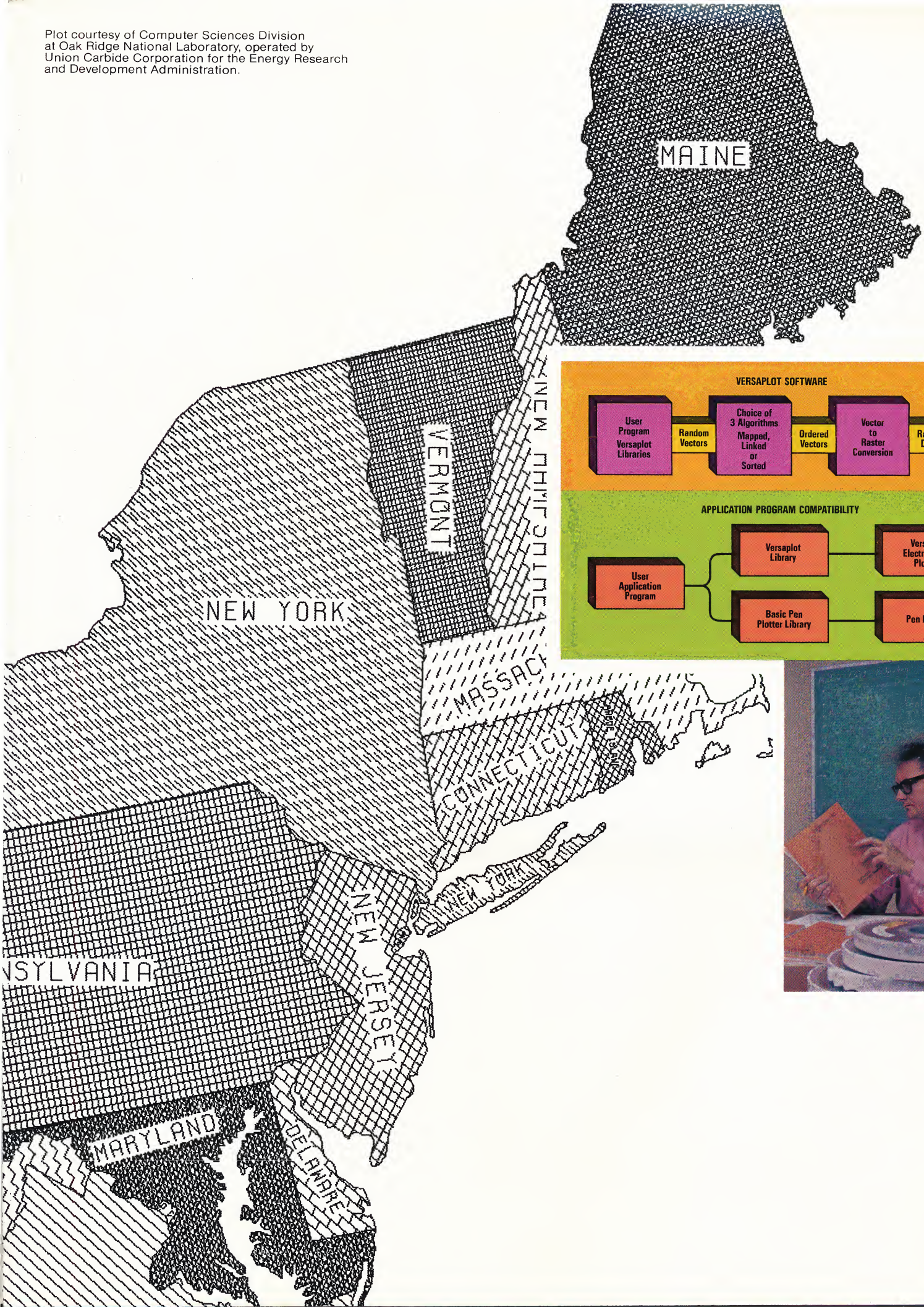
User may choose between EBCDIC or ASCII coding for print data at time of purchase. Labeled or unlabeled tapes can be processed.

Offering a simple method for fast off-line printing or plotting, the system frees the CPU for other tasks, produces single or multiple copies as specified by the operator and allows selective hard copy production as needed from a permanent magnetic record.

Simple operation. Any selected file or group of files can be located quickly. Forward and reverse block search feature speeds access. Simple dial-in controls allow fast, easy selection of files and number of copies. Sequential copies are produced automatically. Any plotting or printing operation can be interrupted at any point without loss of data.

The off-line controller receives data from any tape produced in a standard IBM record format. It strips off parity and after observing proper timing and signal requirements for raster output, transmits data to the electrostatic printer.

Plot courtesy of Computer Sciences Division
at Oak Ridge National Laboratory, operated by
Union Carbide Corporation for the Energy Research
and Development Administration.



21

SOFTWARE

Versaplot™/Version 07 software

Versaplot/Version 07 is the newest, fastest, most efficient plotting software system available from Versatec. The system includes the *Pen Plotter Emulation Program (PPEP)* and *Electrostatic Plotting Software (EPS)*.

PPEP subroutines

PPEP is a set of *Fortran* subroutines compatible with basic pen plotter routines. EPS includes all PPEP subroutines but adds GRID and TONE subroutines that make use of special electrostatic capabilities.

Using Versaplot, the programmer can direct the plotting of any graphic representation on any Versatec plotter. Integrated Versaplot is available for most popular computers and operating systems.

Compatible with existing basic pen plotter programs, Versaplot allows use of traditional graphic procedures, *i.e.*, *pick up the pen, put it at x, y, put the pen down*. It accepts data in many forms—scaled, unscaled, coordinate, incremental, etc.

Other PPEP features include:

An *adjustable plotting window* that defines the limits of the area to be plotted.

SCALE provides global scaling, allowing plot enlargement or reduction with an automatic corresponding change in the plotting window.

A UNITS variable allows the user to specify any units of measure, such as centimeters, miles, etc.

STRIP allows automatic stripping of plots wider than the plotter can accommodate.

With SPACE, the user can limit the amount of blank spacing in the x direction between plots or strips.

Parameter MSGLVL controls optional list and diagnostic output.

Special EPS feature

Electrostatic Plotting Software (EPS) takes advantage of the special capabilities of electrostatic plotting. With the GRID subroutine, the user can call for plotting of horizontal and vertical grid patterns simultaneously with data. Spacing can be uniform linear or non-linear as specified by application, such as semi-log, log-log, etc.

Grids are drawn with perfect registration. Preprinted grid forms are unnecessary.

TONE calls shade any specified polygonal area with any specified tone pattern. This one call can transform line drawings into more readable graphics that better communicate complex relationships. The user can select any closed plane figure bounded by three or more segments, then shade with dots, lines, symbols, patterns, screens, specified shades of gray or solid blacks.

Versaplot/Version 07

PPEP subroutines

PLOTS	initializes the Versaplot-07 system for plotting.
PLOT	processes coordinate data into vectors.
OFFSET	sets coordinate offsets and scaling factors.
FACTOR	sets new drawing factor.
NEWPEN	sets line width.
WHERE	returns current position and drawing factor.
SYMBOL	plots character text and special symbols.
NUMBER	plots numeric values of program variables.
SCALE	searches unscaled data arrays for ranges in maximum and minimum; computes and sets scale factors.
LINE	plots arrays of scaled or unscaled data for line or centered-symbol graphs.
AXIS	draws X or Y axes including tick marks, scale annotations and axis labels.
SETMSG	sets level of diagnostic messages for application debugging.

EPS special subroutines

GRID	draws horizontal and/or vertical grid patterns with user defined line masks. Uniform linear spacing or programmable variable spacing can be used.
TONE	performs area shading with user defined patterns in any user specified polygonal areas.

DYNAMIC TESTING TO STR/RIG-1CS/PROD 7

SIMULATED TEST RUNS FOR ECS EVALUATION OF OUTPUT TIMES (16)

FREESTREAM MACH NO.=0.00 ALTITUDE=50200 FT

LANE=MAIN

HYDRAULICS= BLUE

AICU CODE =66-930-185-00 SYSTEM RESPONSE TO THROTTLING MCP FL

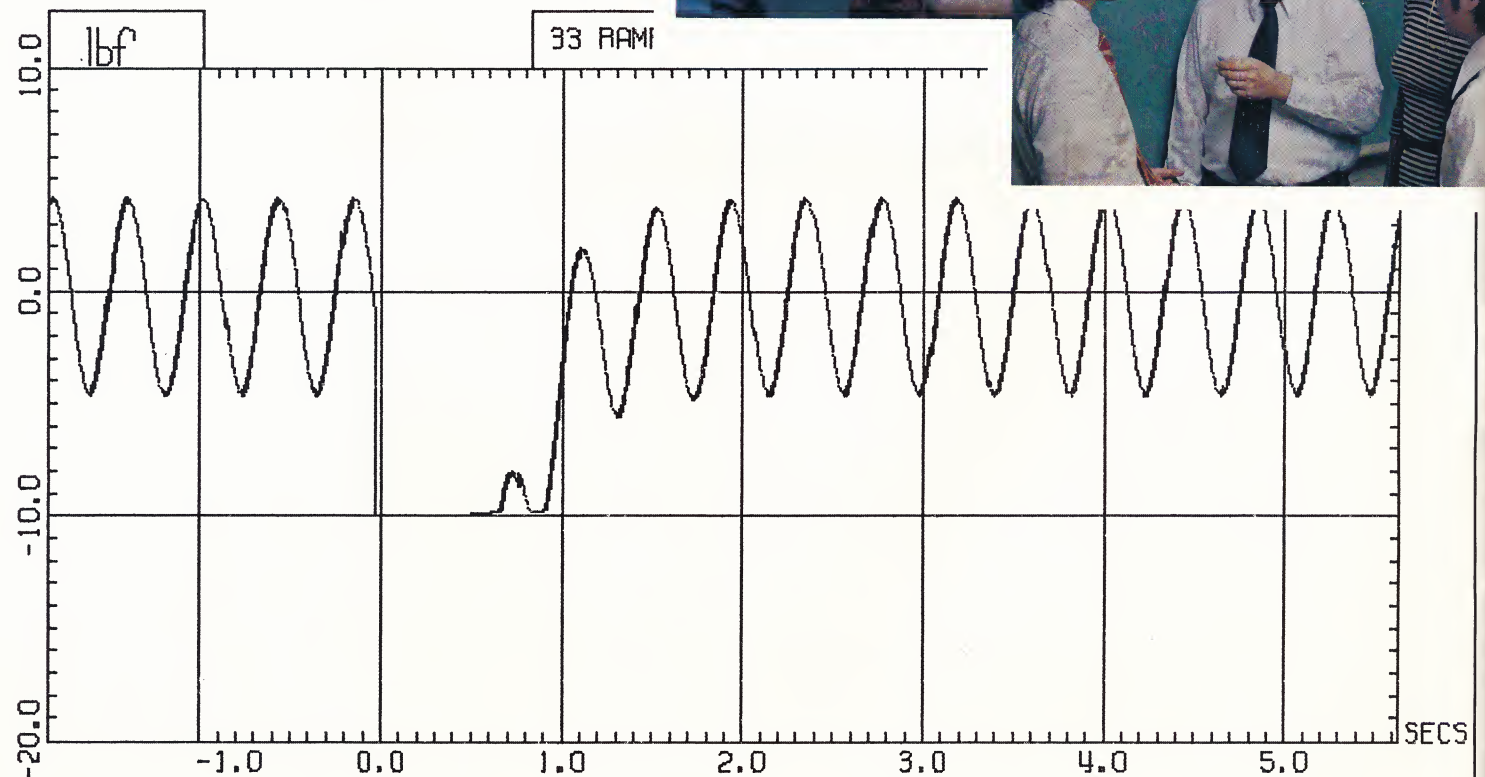
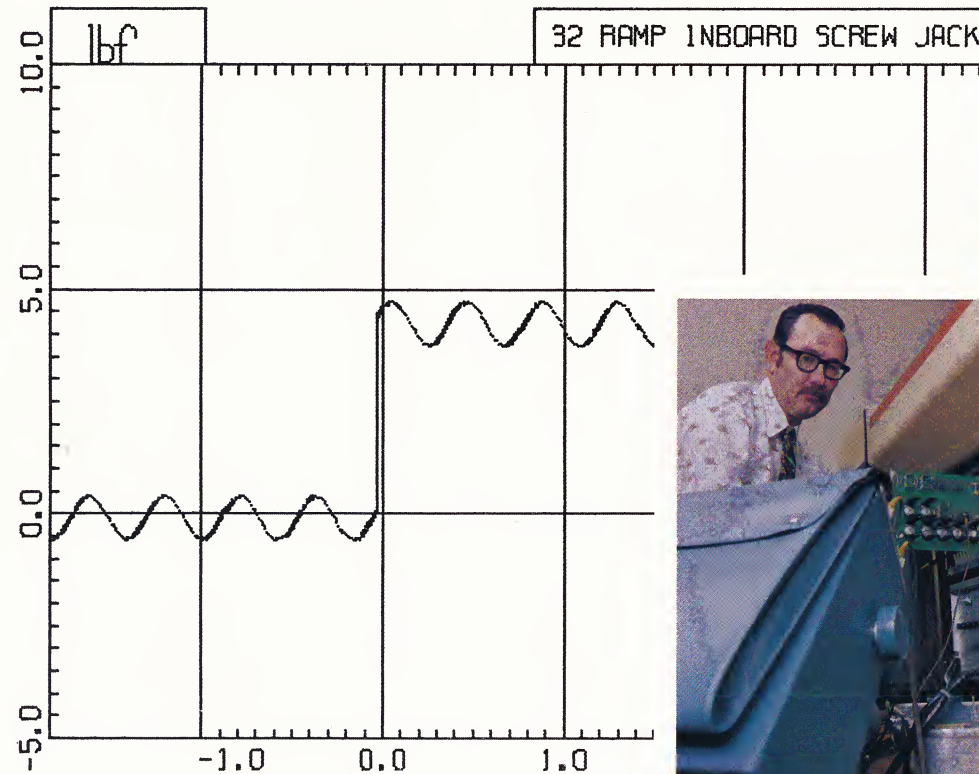
AICU SER. NO.=302

INTAKE INITIALLY CRITICAL AT 1.S.A. +05

REF. CHANNEL=02

SETTLING CRITERION=5 SECS

TOLERANCE:



RUN NO.= 33.

23

SUPPORT

As the leading manufacturer of electrostatic printers and plotters, Versatec protects your investment in better output with more comprehensive support. More people, bigger production-research facilities, and a larger inventory of parts and supplies provide the broadest capability in electrostatics.

This capability is delivered by a responsive sales and service organization with wider application experience. No wonder Versatec outsells all competitors combined.

Service

Preventive maintenance programs and on-call service ensure continuing performance. Versatec maintains an inventory of most replacement parts available via a quick-response distribution system. A world-wide network of well trained, well equipped service personnel working out of more than forty service centers can provide 24-hour service almost anywhere. Scheduled training courses for your own service personnel are available on-site or at Versatec.

A full service warranty and installation plan provides initial hardware installation and checkout, instruction in hardware operation and use of supplies, and no-charge time and travel expenses during the warranty period. A software full service plan offers automatic software operating manual updates, new Versaplot releases to enhance performance as they become available, and corrective codes to solve specific plotting software problems.

For more information, write for Maintenance Service Bulletin.

Documentation

Before you specify any electrostatic equipment or software, compare documentation. Versatec devotes extra attention to this support. It shows.

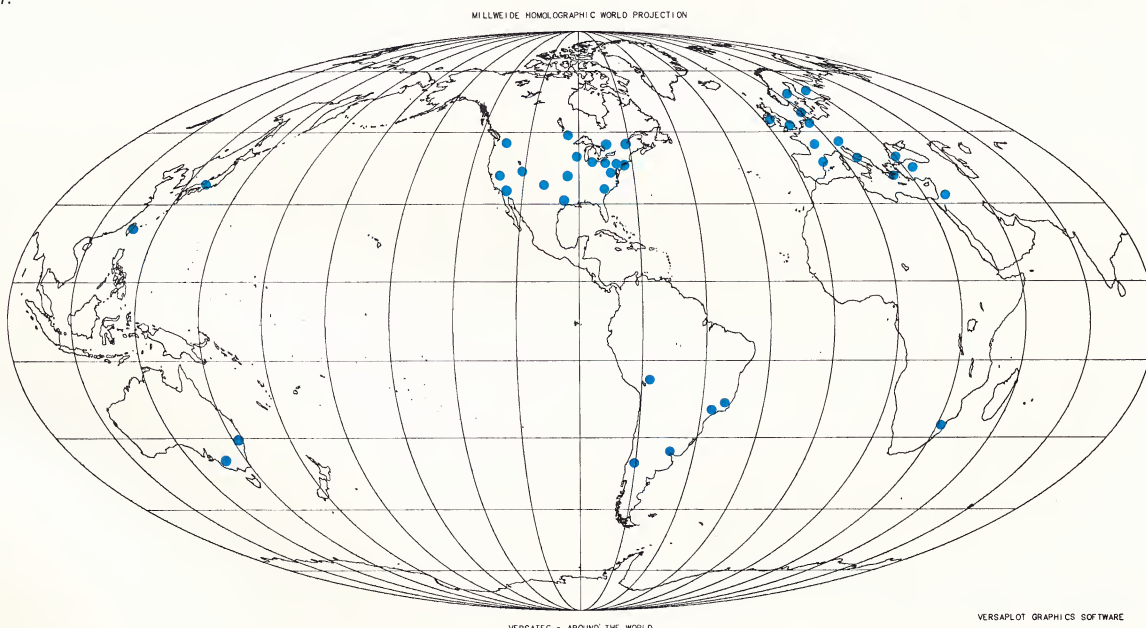
Comprehensive equipment manuals carry a full complement of schematics as well as standard operation and maintenance procedures. Integrated Versaplot Software documentation includes comprehensive graphics programming manual and operating manual.

Supplies

One toll-free call (from anywhere in the U.S.A. outside of California) to a Versatec supply specialist assures fast delivery of paper, toner, concentrate and dispersant designed specifically for your Versatec unit. All orders are normally shipped within 48 hours.

Our supply specialists can help you order supplies that provide the best performance. They can help you determine quantity levels that offer the most economical prices for your application. And they can help you maintain a smooth and orderly flow of supplies without excessive inventories or critical shortages.

For more information, write for Bulletin Number 287: "Supplies for your Versatec electrostatic printer/plotter."



Tell us about your specific application. We'll send you specific literature and output samples. For prices, warranty and delivery information, call your local Versatec representative. He will answer your questions and quietly demonstrate the speed, versatility and reliability of electrostatic output.



2805 Bowers Avenue
Santa Clara, California 95051
Telephone: (408) 988-2800
TWX: 910-338-0243

Versatec European Headquarters
Hambridge Lane
Newbury, Berkshire, England
Telephone: (0635) 42421
Telex: 847259

Specifications subject to change.

Bulletin number 260

™ Versaplot, Versaplot PPEP and Versaplot EPS are Versatec trademarks

XEROX® is a trademark of XEROX CORPORATION

© Versatec, 1977 Litho in U.S.A.